

Towards a Pre-Intervention Analytical Methodology

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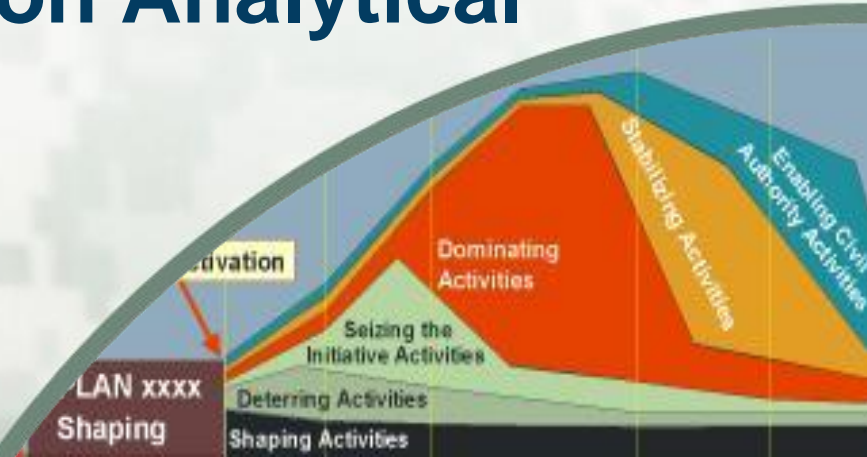
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Engineer Research and Development Center



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Agenda

- Focus on the Population
- Current Frameworks
- Primary Objective
- The Analytical Process
- Framework Goals
- Foundational Framework
- Operationalizing the Framework
- The Factor Map
- Applying the Framework in Joint Intelligence Preparation of the Operational Environment (JIPOE)
- Summary






Focus on the Population

- “[The U.S.] intelligence apparatus still finds itself unable to answer fundamental questions about the environment in which we operate and the people we are trying to protect and persuade.” Michael T. Flynn, Matt Pottinger, Paul D. Batchelor, “Fixing Intel...” Jan 2010.
- “...The most effective way to use models of sociocultural knowledge and behavior is not as ‘standalone problem-solving technologies’ but rather as part of a broader effort to understand human behavior, in which the models are used to offer insights, trigger ideas, and generate new stories as a way of aiding decisions and judgments made by humans.” Pool et al; National Research Council, “Sociocultural Data to Accomplish DoD Missions: Toward a Unified Social Framework.” 2011.



Current Frameworks

Framework Dimension	Interagency Conflict Assessment Framework (ICAF)	Conflict Assessment Peace-Building Planning (CAPP)	District Stability Framework (DSF)	Counter-Terrorism Analytical Framework (CTAF)
'Creator'	Department of State (DoS) 	University / Academia	USAID Office of Military Affairs 	Joint Staff, U.S. Armed Forces 
User	DoS w/ Interagency	Non-Gov't Organizations	Soldiers, Officers	DoD Organizations
Purpose	Develop <u>interagency</u> shared understanding of a <u>country's</u> conflict dynamics and potential entry points	Desk and field officers concisely <u>assess</u> <u>conflict dynamics</u> and <u>plan programs</u>	Develop <u>field-level</u> understanding of <u>instability drivers</u> from <u>local</u> perspective for understanding & planning	Dynamic threat assessment & center of gravity analysis; Identify <u>critical vulnerabilities</u> of <u>terrorist organizations</u> .
Typical 'Unit' of Analysis	National	Conflict-centered	Local... <i>District</i>	Threat-centered
Key Data Source	Subject Matter Expert (SME) Workshop(s)	Dialogue Methods, Polling, Media	Field Interviews	Intelligence / All-Source
Current Tool Integration	Prototype, none identified	None identified	Interview data capture, aggregation, analysis	



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Primary Objective

To inform the work of military analysts and planners with the knowledge and insights of social science literature in a manner that preserves the connection to the original sources.



The Analytical Process

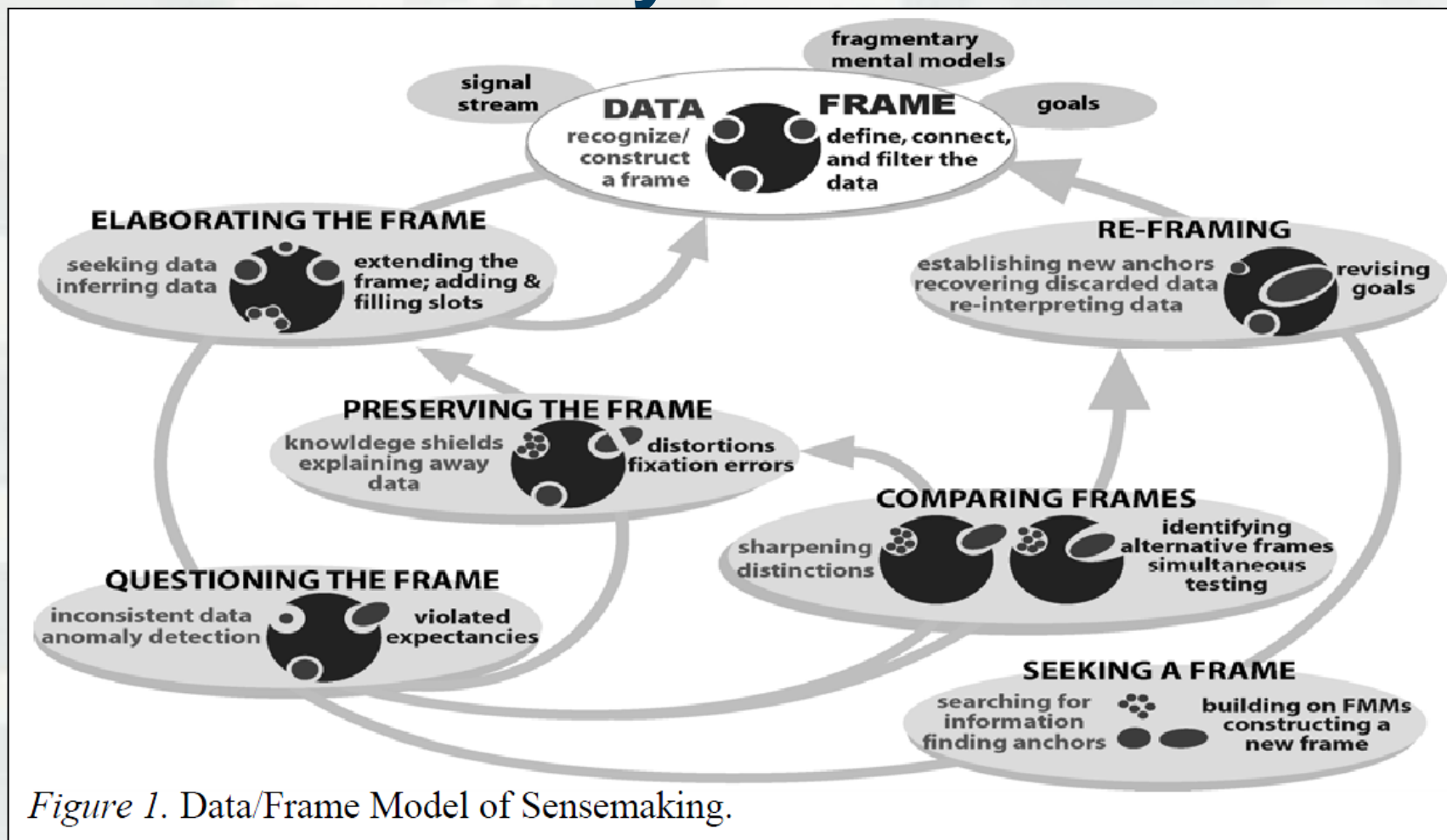


Figure 1. Data/Frame Model of Sensemaking.

Frames: “Fragments of local cause-effect connections, rules of thumb, patterns of cues, and other linkages and relationships between cues and information to guide the sensemaking process” (Sieck et al 2007:vi).



From: W. R. Sieck, G. Klein, D.A. Peluso, J. L. Smith, and D. Harris-Thompson 2007.
FOCUS: A Model for Sensemaking. Technical Report 1200, U. S. Army Research Institute for the Behavioral and Social Sciences.

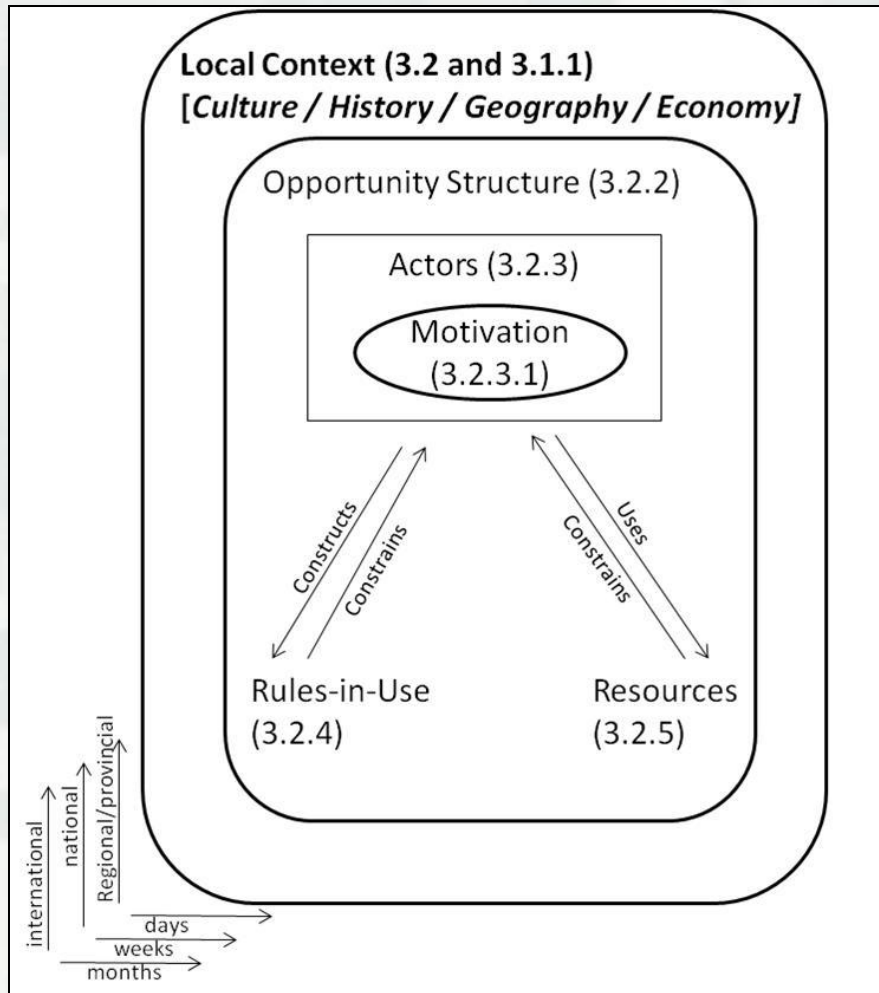
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Framework Goals

- Demonstrate how a framework, composed of frames, can serve to:
 - Orient an analyst to what's important to know about a situation when assessing the sociocultural dynamics in the operational environment.
 - Organize mission-relevant sociocultural information to enhance understanding.
 - Facilitate the development of conceptual or computational models for analysis of these sociocultural dynamics.

- **Framework:** “Identifies, categorizes, and organizes those factors deemed most relevant to understanding some phenomenon,” (McGinnis, 2011).
- **Theory:** “Posits general causal relationships among some subsets of these variables or categories of factors, designating some types of factors as especially important and others as less critical for explanatory purposes,” (McGinnis, 2011).
- **Frames:** “Fragments of local cause-effect connections, rules of thumb, patterns of cues, and other linkages and relationships between cues and information to guide the sensemaking process” (Sieck et al 2007:vi).
- **Model:**
 - “Specifies the specific functional relationships among particular variables or indicators that are hypothesized to operate in some well-defined set of conditions,” (McGinnis, 2011).
 - A model is a physical, mathematical, or otherwise logical representation of a system, entity, phenomenon, or process. (AR 5-11)

Organizing Principle

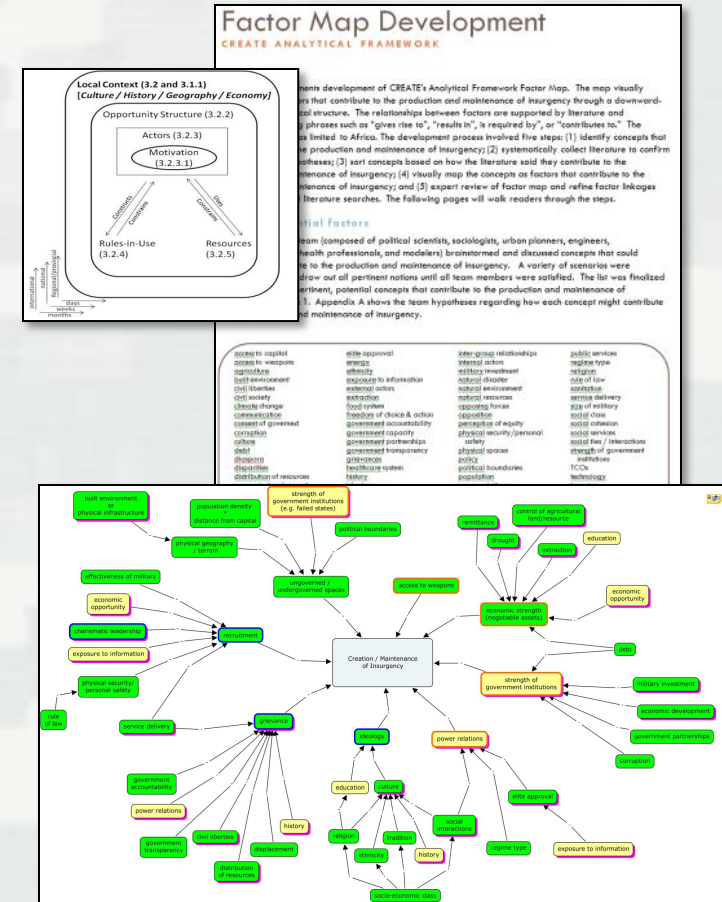


- A high-level actor-centric lens through which to view an operational context.
 - (Inspired by McGinnis and Ostrum's 'first tier SES variables' [2011]).
- **Local context:** A system of rules-in-use, actors, and resources available at the locality.
- **Opportunity structure:** Specific configurations of resources, institutional arrangements, historical precedents for social mobilization (Kitschelt, 1986).
- **Actors:** Persons or groups of persons who can act collectively for a common purpose (McGinnis and Ostrum, 2011).
- **Motivation:** What moves an actor to convert latent will into action in a particular situation.
- **Rules in Use:** Rules that guide the individual behavior of actors and the interactions among actors.
- **Resources:** Sources of support that carry some strategic value as perceived by the actors.



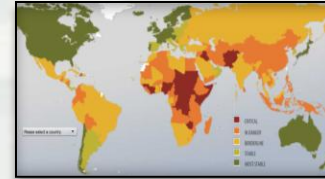
Developing Frames and a Framework

- Identified and analyzed frames about insurgency from peer-reviewed social science literature.
- Focused the collection of frames on the creation, production, and maintenance of insurgency in Africa.
- Constrained the search to literature that can be obtained via a readily available search engine that is not limited to use on a discipline-centric corpus.
- Created a synthesis map of key factors in the creation, production, and maintenance of insurgency.
- Ensured that factors were grounded and traceable to source literature.



Needs for a Useful Framework

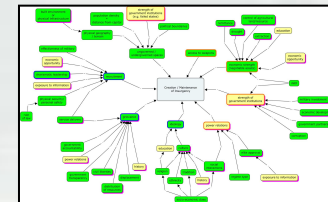
- Moving from data and frames to models involves applying theory that is relevant for understanding a particular situation.
- A useful framework will include a collection of frames, which represent theories derived from the social science literature.
- Modeling a particular situation entails the selection of theories from a collection of frames.
- When modeling a particular situation, the components of the foundational framework – actors, resources, and rules-in-use related to an opportunity structure – have a role to play in organizing the application of the theories.



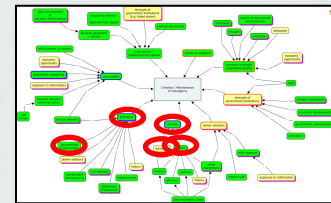
Global



Local



**Broad
Literature
'Frames'**



Situated



Local Context (3.2 and 3.1.1)
[Culture / History / Geography / Economy]

Opportunity Structure (3.2.2)

Actors (3.2.3)

Motivation (3.2.3.1)

Rules-in-Use (3.2.4)

Resources (3.2.5)

Constraints

Uses

Intentional
rational
spontaneous

Establish

[illegible]

The mind map is centered on 'Concepts of Mathematics & Philosophy'. It branches out into several main categories:

- Mathematics**
 - Logic
 - Propositional Logic
 - Quantification
 - Modal Logic
 - Set Theory
 - Probability
 - Statistics
 - Geometry
 - Algebra
 - Calculus
 - Trigonometry
 - Number Theory
 - Combinatorics
 - Game Theory
 - Decision Theory
 - Set Theory
 - Set Theory
 - Probability
 - Statistics
 - Geometry
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 - Decision Theory
- Philosophy**
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 - Quantification
 - Modal Logic
 - Set Theory
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Factor Map Development

CREATE ANALYTICAL FRAMEWORK

The following document development of CREATE's Analytical Framework Factor Maps. The map visually represents the factors that contribute to the production and maintenance of insurgency through a dominant but unexplained theoretical structure. The relationship between factors are supported by literature and synthesized in three pieces such as "the rise to", "results in", or "contributes to".

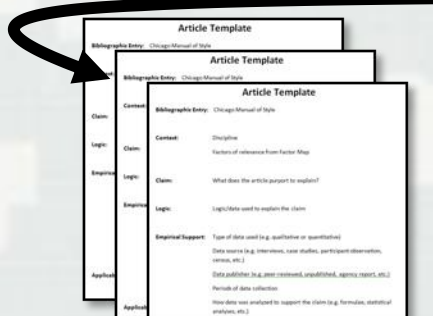
These three areas "lay (out) the conceptual framework process involved for this map. (1) Identify concepts but may contribute to the production and maintenance of insurgency; (2) systematically collect literature to confirm or disprove these areas; (3) use concepts to develop process involved for this map. (1) Identify concepts but may contribute to the production and maintenance of insurgency; (2) systematically collect literature to confirm or disprove these areas; (3) use concepts to develop process involved for this map.

The production and maintenance of insurgency (4) clearly map the concepts in factors that contribute to the production and maintenance of insurgency and (5) answer a series of factor map and offer factor based upon an extended literature searches. The following pages offer walk-throughs through the maps.

Step 1 | Potential Factors

A multidisciplinary team composed of political scientists, sociologists, urban planners, engineers, geographers/political health professionals, and nonlinear/complex and dynamical systems experts, engaged/potential contributors to the production and maintenance of insurgency. A variety of literature, including but not limited to, was reviewed to identify factors that contribute to the production and maintenance of insurgency. A list of the most pertinent, potential concepts that contribute to the production and maintenance of insurgency is shown. A legend of the map uses hypotheses regarding how each concept might contribute to the production and maintenance of insurgency.

Refined Req'ts



A collage of overlapping book covers and a large blue arrow pointing right. The books visible include:

- TRANSFORMING THE REGION: SUPERMARKETS AND THE LOCAL FOOD ECONOMY** by David Alston, 2007, 128 p.
- Armed Forces & Society** by David Alston
- Witney Experiences, Insights and Education: Businesses or Antagonists in Their Own Development?** by David Alston, 2007, 128 p.
- Clement Erme Acibe: Accountability in Africa and the International Community** by David Alston
- CENTRE FOR SOCIAL SCIENCE RESEARCH**

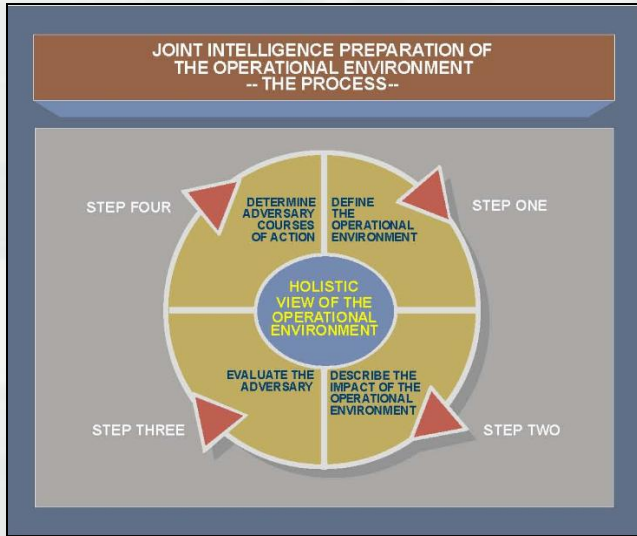
A large blue arrow points from left to right across the collage.

[illegible]

The screenshot displays the 'The World of the Future' simulation interface. The main window shows a 3D landscape with a large red 'X' and a small figure. The left sidebar contains a 'Map' section with a list of locations and a 'Legend' section with a color-coded key. The bottom right corner shows a 'Data' section with a table of statistics.



Application Concept

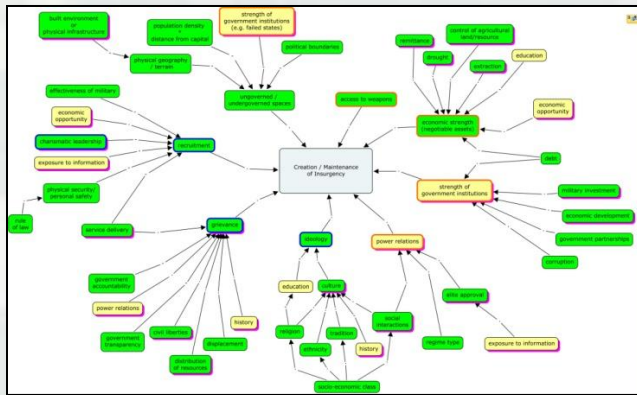


1. The first two steps of a JIPOE analysis are:

1. Define the Operational Environment (OE).

2. Describe the impact of the OE.

- a) Develop a geospatial perspective of the OE (incl. area of interest, area of influence).
- b) Develop a systems perspective of the OE (incl. identifying and evaluating threats [e.g., military, criminal, roles of local actors]).
- c) Describe the impact of the OE on adversary and friendly capabilities and broad courses of action (COAs).



2. Steps 1, 2a and 2b above necessitate creating a model of the system on the ground on its own terms: What is the situation and how does it impact U.S. COAs?

1. The organizing principle and the factor map together can focus the analyst on what is important to include in systems analysis of the operational environment.
2. The factor map and associated literature offer theories, and possible explanations of the sociocultural dynamics in the OE.
3. The model (which includes description and explanation of the system) is the basis for evaluating threats and considering COAs via simulations.



Summary

- Understanding the population is critical to mission success.
- The organizing principle and factor map applied in combination as a framework supports sensemaking, modeling and aids understanding.
- The work is anchored in the peer-reviewed social sciences.
 - ▶ Maintaining explicit connection to social science literature facilitates deeper inquiry when time permits.
- Enhanced understanding of sociocultural dynamics improves decision making.



Discussion



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Backup Material



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Project Team

- **Engineer Research & Development Center (ERDC)**
 - *Participating ERDC Sites include Champaign, Alexandria, Hanover.*
 - Project oversight & management, primary analytical framework development, remote analysis guidance, challenge problem & proxy analysis, stakeholder engagement.
- **Center for Nation Reconstruction and Capacity Development, U.S. Military Academy at West Point**
 - Horn-of-Africa data & systems diagrams, existing JTF-HOA assessment process, indicators & metrics.
- **Frontier Technologies, Inc.**
 - Analysis of CAPP, ICAF, DSF frameworks; interagency perspective use-case.
- **Institute for Defense Analysis**
 - AFRICOM and EUCOM facilitation, challenge problem definition, data collection, pseudo-models.
- **Securboratorion**
 - Prototype tool - semantic search.
- **University of North Carolina – Charlotte**
 - Conceptual model; architecture; prototype tools; challenge problem models.
- **University of Illinois at Urbana-Champaign**
 - Research assistance.
- **PERTAN**
 - Mediated modeling, systems dynamics, text analysis.



Why Another Framework?

- To meet the primary objective:
 - Inform the work of military analysts and planners with the knowledge and insights of the social sciences that preserves the connection to the grounding literature
- Our approach in broad outline:
 - Develop a framework of frames to aid in sensemaking: it's not just about the facts on the ground, it's about **understanding** the significance of those facts
 - Ground that framework in the social science literature
 - Test that framework against a challenge problem
 - Develop prototype tools based on the framework that support understanding and conceptual/computational modeling
 - Support Joint Intelligence Preparation of the Operational Environment (JIPOE)



The Factor Map

